

Template & Guidelines for *Subject-Specific Competencies* Matrices

1. Construct a matrix for each applicable subject area. For example, elementary programs will create separate matrices for each of the subject areas represented with the elementary curriculum vs. secondary programs that will create a single matrix.
2. Within a matrix, indicate groupings of alternate courses (see *Choose one.* in the sample below) to reveal comparability across the students' options.
3. Matrices must identify where specific competencies (vs. entire strands) are taught in the curriculum. **Note:** Some subject areas (e.g., English) do not use strands (e.g., English identifies eleven competencies for candidates); other subject areas have organized their competencies into several strands (e.g., mathematics has eight strands, within each of which are several competencies).

	Choose one.				
(Insert subject area) Competencies for the Beginning Elementary Teacher in Missouri					
(Insert strand title [when appropriate, e.g., English/language arts does not use strands])					
[Insert individual competencies]					

Sample completed matrix follows.

Sample Elementary Mathematics Competencies Matrix

Mathematics Competencies for the Beginning Elementary Teacher in Missouri	Choose one.				
	MAT H-133	MAT H-173	MAT H-243	MAT H-324	ELED- 473
1 Mathematical Processes and Tools					
1.1 Use problem solving to investigate and understand mathematical content.	Y		Y		Y
1.2 Communicate mathematical ideas in writing and orally, using mathematical language and symbols.			Y		Y
1.3 Develop and evaluate mathematical conjectures and arguments to explain and validate mathematical reasoning.			Y		
1.4 Use mathematical modeling to simulate events and occurrences.					Y
1.5 Analyze and articulate connections within mathematics					
1.6 Analyze and articulate connections of mathematics to other disciplines through applications					Y
1.7 Understand historical development of mathematics, including the contributions of under-represented groups and diverse cultures.					
1.8 Use manipulatives to model and explain mathematical concepts.					Y
1.9 Articulate the dynamic nature of mathematics and its significant role in social, cultural, and economic development.					
1.10 Using calculators and computers as tools to generate multiple representations of mathematical concepts.	Y		Y		
1.11 Demonstrate facility with technological tools to support geometric construction/investigation, graphing, pattern exploration, and data investigation.	Y				Y
1.12 Understand and articulate the role of technology in supporting mathematics understanding.	Y				

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2 Number Operation					
2.1 Understand properties of real numbers, including equivalent representations.	Y				
2.2 Analyze effects of and relationships among operations on real numbers			Y		
2.3 Using estimation in working with quantities, measurement, computation, problem solving.			Y		Y
2.4 Develop, use, model, and explain computational algorithms.					Y
2.5 Understand and apply numerical computation techniques (mental, paper/pencil, calculator) and extend them to algebraic expressions.					
3 Geometry and Measurement					
3.1 Understand and apply various systems and tools of measurement.			Y	Y	Y
3.1 Understand and apply Euclidean geometric concepts, properties, and relationships to describe and model mathematical ideas in real-world constructs.				Y	
3.1 Identify, describe, measure, compare, classify, and represent two- and three-dimensional figures.				Y	
3.1 Understand and apply concepts of motion in two-dimensional space through transformations.				Y	
4 Data Analysis, Probability, and Statistics					
4.1 Collect, organize, and display data in meaningful form(s).			Y		Y
4.2 Use experimental and theoretical probabilities as appropriate to formulate and solve problems involving uncertainty.			Y		
4.3 Use descriptive statistics (e.g., measures of central tendency and dispersion) to analyze data and to make predictions and decisions.			Y		

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5 Patterns, Functions, & Relationships					
5.1 Identify and describe patterns and relationships.		Y			Y
5.2 Represent patterns and functions as symbolic expressions, verbal descriptions, tables and graphs, and move from one representation to another.		Y	Y		
5.3 Discover and analyze functional relations which arise from diverse problem situations.		Y			
5.4 Use algebraic concepts and notation to describe relationships and solve problems.		Y		Y	
6 Discrete Mathematics					
6.1 Use a variety of counting techniques and principles (e.g., permutations and combinations)		Y			
6.2 Identify, model, and analyze situations represented by discrete and continuous data.		Y			

Course Number Legend:

MATH-133: College Algebra

MATH-173: Finite Mathematics

MATH-243: Probability & Statistics

MATH-324: Foundations of Geometry

ELED-473: Integrated Mathematics/Science Concepts for PK-Grade 6: Seminar & Field Experience

(To be continued with comparable matrices for English/language arts, social studies, & science.)